

## TRANSMITTAL OF APPEAL BRIEF (Small Entity)

Docket No.

3787

In Re Application Of: SIXT, B., ET AL

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/585,378	04/06/2007	KOAGEL, J.B.	278	3744	5954

Invention: TRANSPORT CONTAINER FOR KEEPING...

COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:

12/02/2010

☒ Applicant claims small entity status. See 37 CFR 1.27

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Dated: 02/02/2011

MICHAEL J. STRIKER  
REG. NO.: 27233

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**UNITED STATES PATENT AND TRADEMARK OFFICE**

Examiner: J.B. Koagel

Art Unit: 3744

Docket No. 3787

In re:

Applicant: SIXT, B., et al

Serial No.: 10/585,378

Filed: April 6, 2007

***BRIEF ON APPEAL***

February 2, 2011

Commissioner for Patents  
P O Box 1450  
Alexandria, VA 22313-1450

This is a Brief on Appeal from the final rejection of Claims 30-32, 34-35, 38 and 44-51 by the Examiner.

REAL PARTY IN INTEREST

The real party in interest in this application is Bernhard Sixt having a residence address of Weldstrasse 26, 85667 Oberframmern, Germany.

### RELATED APPEALS AND INTERFERENCES

There are no prior and pending appeals, interferences or judicial proceedings known to appellant, the appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

### STATUS OF CLAIMS

The patent application was filed originally with Claims 1-33.

During the prosecution Claims 1 - 29 and 33 have been cancelled, and Claims 34-51 have been submitted. Subsequently, Claims 36-37 and 39-43 have been cancelled as well.

The application now contains Claims 30-32, 34-35, 38 and 44-51. All claims are rejected by the Examiner.

### STATUS OF AMENDMENTS

In this application an Office Action was issued on October 6, 2010.

After this Office Action no Amendment has been filed.

## SUMMARY OF CLAIMED SUBJECT MATTER

The present application deals with a transport container for keeping frozen material chilled defined in Claim 30.

The transport container has an insulated chamber (3) disclosed in first line on page 5 of the specification and shown in Fig. 1. The container further has an insulation (6) which is a super insulation with a coefficient of thermal conductivity  $\lambda$  of  $< 0.005 \text{ W/m K}$  and encloses the insulating chamber. This is disclosed in lines 20-25 on page 6 of the specification and shown in Fig. 1.

An inner container (2) is arranged in the insulating chamber as disclosed in line 1 of page 6 and shown in Fig. 1. The inner container has at least one chilling chamber (16) for the material and at least one refrigerant chamber (15) which is permanently hermetically closed. There is no insulation between the inner container and the chilling chamber. This is disclosed in lines 24 on page 6 and shown in Fig. 3. A refrigerant (15') is located in the refrigerant chamber (15) and gives off cold by a solid/liquid phase transformation. This is disclosed in lines 29-35 on page 6 and shown in Fig. 3.

The refrigerant is a pure organic substance undergoing the phase transformation between solid and liquid state in a temperature range from  $-15^\circ$  to

-100°C and has a heat of melting of at least 50 J/ml, as disclosed for example in lines 1-10 of the specification.



## GROUND OF REJECTION TO BE REVIEWED ON APPEAL

In the Office Action the Examiner rejected Claims 30, 32, 46 and 48-51 under 35 USC 103(a) over the U.S. patents to Coetzee and Ryu, and further in view of the U.S. patents to Owen and Drake.

The first ground of rejection is therefore whether these claims are rejectable under 35 USC 103(a) over the above identified references.

Claim 31 was rejected under 35 USC 103(a) as Claim 30, and further in view of the U.S. patent to Guice.

Thus, the second ground of rejection is whether Claim 31 is rejectable under 35 USC 103(a) over these references.

Claims 34-35 were rejected under 35 USC 103(a) as Claim 30 and further in view of the U.S. patent to Cook.

Thus, the third ground for rejection is whether these claims are rejectable under 35 USC 103 over these references.

Claim 38 is rejected under 35 USC 103(a) as Claim 30, and further in view of the U.S. patent to Connelly.

The fourth ground of rejection to be reviewed on appeal is therefore whether Claim 38 is rejectable under 35 USC 103(a) over these references.

Claim 44 is rejected under 35 USC 103(a) as Claim 30, and further in view of the Japanese Publication to Yomei.

The fifth ground for rejection is whether Claim 44 is rejectable under 35 USC 103(a) over these references.

Claim 45 was rejected under 35 USC 103(a) over the patents to Coetzee, Ryu, Owen, Drake, Yomei and further in view of the patent to Mosby.

The sixth ground to be reviewed on appeal is whether Claim 45 is rejectable over these references.

Claim 47 was rejected under 35 USC 103(a) as Claim 30, and further in view of the patent to Mullens.

The seventh ground for rejection is therefore whether Claim 47 is rejected under 35 USC 103(a) over these references.

Also, Claims 30-32, 34-35, 38, and 44-51 and also Claim 49 were rejected under 35 USC 112.

This the eighth ground for rejection to be reviewed on appeal.

## ARGUMENT

### Argument related to the first ground to be reviewed on appeal.

Claim 30, the broadest claim on file, defines a transport container for keeping frozen material chilled, comprising the following components:

an insulating chamber;

an insulation which is a superinsulation with a coefficient of thermal conductivity  $\lambda$  of  $< 0.005 \text{ W/m K}$  and encloses said insulating chamber;

an inner container arranged in said insulating chamber,

said inner container having at least one chilling chamber for the material and at least one refrigerant chamber which is permanently hermetically sealed, such that there is no insulation between said inner container and said chilling chamber; and

a refrigerant located in said refrigerant chamber and giving off cold by solid/liquid phase transformation,

said refrigerant being a pure organic substance undergoing the phase transformation between solid and liquid state in a temperature range from  $-15^\circ$  to  $-100^\circ\text{C}$ , and having a heat of melting of at least  $50 \text{ J/ml}$ .

The present invention is designed to enable building a cost effective deep frozen tissue bank, which is badly needed for state of the art molecular diagnostic research to enable finally personalized medicine. While

there are functional technical solutions known (like liquid nitrogen or dry ice shipments) those solutions are classified as dangerous goods shipment and are prohibitively expensive. Many attempts have been made to solve that problem but the simple fact is that none of them resolved all involved issues or yielded a practical solution.

The unique combination of several key elements in the present invention are essential to eliminate the disadvantages of the prior art and to work highly advantageously and perfectly for the intended use, which is to provide a container, fit for shipping small deep frozen specimen with ordinary courier services in a cost effective way.

The present invention addresses for the first time in unique way all issues and represents finally the thought-after enabling technology for state of the art molecular tissue banking being the basis for personalized treatment.

Only the combination of the following elements allows meeting the limited physical window with the necessary surface/volume ration and the practical window of shipping with acceptable weight and with no significant transport restrictions:

- Super insulation  $<0.005\text{W/m K}$  is essential and responsible for achieving cooling times of several days with a parcel size, which can be transported by courier.

- The heat of melting of  $>50\text{J/ml}$  is essential and responsible for keeping the volume of the refrigerant sufficiently low to achieve a parcel size, which can be transported by courier.

- The choice of a pure organic substance is essential and responsible for ensuring a sharp melting temperature (mixtures do not have that defined melting temperature), keeping the weight low enough for shipment (e.g. organic substances have usually a density below  $1\text{g/ml}$  while mercury has  $10\text{g/ml}$ ) and ensuring that no dangerous good requirements are applicable (e.g. n-hexanol as a pure organic substance meets all required parameters).

None of the references disclose the above mentioned new features of the present invention. The references contain no hint, suggestion or motivations for combining them with one another. The references do not provide disclosures for the above specified features, neither they accomplish the highly advantageous results which are accomplished by the present invention. Only the present invention, which provides the above mentioned exceptionally important features, with their interaction and interjunction, provides for the highly

advantageous results which cannot be accomplished by the solutions disclosed in the references. It should be also mentioned that multiple references have been combined by the Examiner, which additionally shows that the present invention cannot be considered as obvious.

It is therefore believed that the Examiner's rejection of Claim 30, as well as Claims 31-32, 34-35, 38 and 44-51 which depend on it under 35 USC 103(a) and share its features over the patents to Coetzee, Ryu, Owen and Drake should be considered as not tenable and should be withdrawn.

As for the second, third, fourth, fifth, sixth, and seventh grounds for rejection to be reviewed on appeal, these rejections relate to the dependent claims which depend on Claim 30 and share its allowable features. Therefore, these claims should also be allowed.

As for the rejection of the claims under 35 USC 112, which is the eighth ground to be reviewed on appeal, the Examiner indicated that in his opinion the recitation of the refrigerant being a pure organic substance in Claim 30 was unclear. At the same time he interpreted this statement that the refrigerant is considered to be all organic materials and the specific ingredients in Claim 50 have a similar phase transformation. The Examiner's interpretation is correct. It is believed that therefore these statements can be acceptable.

The same is true with respect to Claim 49. It can be kept as it is since the Examiner's interpretation was correct.

Therefore, the rejection of the claims under 35 USC 112 should be withdrawn, and the eighth ground of rejection to be reviewed on appeal should be resolved.

Reconsideration and allowance of the present application is most respectfully requested.

Respectfully submitted,



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## CLAIM APPENDIX

Claims 1-29 cancelled.

30. A transport container for keeping frozen material chilled, comprising an insulating chamber; an insulation which is a superinsulation with a coefficient of thermal conductivity  $\lambda$  of  $< 0.005 \text{ W/m K}$  and encloses said insulating chamber; an inner container arranged in said insulating chamber, said inner container having at least one chilling chamber for the material and at least one refrigerant chamber which is permanently hermetically sealed, such that there is no insulation between said inner container and said chilling chamber; and a refrigerant located in said refrigerant chamber and giving off cold by solid/liquid phase transformation, said refrigerant being a pure organic substance undergoing the phase transformation between solid and liquid state in a temperature range from  $-15^\circ$  to  $-100^\circ\text{C}$ , and having a heat of melting of at least  $50 \text{ J/ml}$ .

31. A transport container as defined in claim 30; and further comprising a chilling jacket having a jacket chamber which contains a second refrigerant with a solid/liquid phase transition in a temperature range from  $0$  to  $-15^\circ\text{C}$ ; and an insulating jacket which shields said chilling jacket from outside and has a superinsulation with a coefficient of thermal conductivity  $\lambda$  of  $< 0.01 \text{ W/m K}$ .

32. A transport container as defined in claim 30, wherein said refrigerant chamber is configured like said chilling chamber in said inner container.

Claim 33 cancelled.

34. A transport container as defined in claim 30, further comprising at least one additional refrigerant container with a refrigerant chamber for arrangement in said insulating chamber, wherein at least one of said inner container and said additional container is composed of a material selected from the group consisting of high-grade steel, titanium, a titanium alloy, aluminum, and a low-temperature resistant plastic.

35. A transport container as defined in claim 30, wherein said refrigerant chamber has a filling opening, and wherein said filling opening is welded closed.

Claims 36 and 37 cancelled.

38. A transport container as defined in claim 30, wherein said refrigerant chamber has a filling opening, and wherein said filling opening is closed on an inside by a screw stopper and welded closed on an outside.

Claims 39-43 cancelled.

44. A transport container as defined in Claim 30, wherein said inner container has a double-walled hollow cylinder including an inner wall and an outer wall and also a bottom at one end and an annular wall at the other end, said refrigerant chamber being formed between said inner wall and said outer wall, and said annular wall and said bottom, and said chilling chamber being arranged centrally and delimited by said inner wall and said bottom.

45. A transport container as defined in Claim 44, wherein said inner wall of said cylinder has a thread for an element which closes said chilling chamber and is selected from the group consisting of a screw cover and a screw stopper.

46. A transport container as defined in Claim 30, wherein said insulation is configured as a cup with said insulating chamber which is adapted to said inner container and is closable by an insulating closure.

47. A transport container as defined in Claim 30, wherein said insulation is surrounded by a rigid protective tube having ends which are closed respectively by a cover.

48. A transport container as defined in Claim 30, wherein said refrigerant is a refrigerant which melts/solidifies as the temperature  $< -30^{\circ}\text{C}$ .

49. A transport container as defined in Claim 30, wherein said refrigerant is a refrigerant which melts/solidifies as the temperature  $< -85^{\circ}\text{C}$ .

50. A transport container as defined in Claim 30, wherein said refrigerant is a refrigerant selected from the group consisting of octane, 1-hexanol, 2-hexanone, hexanal, pyridine, 1, 2, 4-trimethylbenzene, 1, 3, 5-trimethylbenzene and chlorobenzene.

51. A transport container as defined in Claim 30, wherein said superinsulation has a coefficient of thermal conductivity  $\lambda < 0.002 \text{ W/m K}$ .

## EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.